



## Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

## CORRESPONDENCE

A DEFENSE OF THE STANDARD ACCIDENT TABLE. In undertaking the defense of the *Standard Accident Table*, reviewed by Professor Fisher in the December number of this REVIEW,<sup>1</sup> I do not take exception to that part of the criticism which points out certain regrettable errors of hasty preparation. *The Standard Accident Table* was prepared under very great pressure to meet a situation which had to be met at once, and was published at the time when the rapid passage of compensation laws in one state after another required an enormous amount of rate-making work by the Actuarial Committee of the central organization of casualty insurance companies, of which I have been chairman since its appointment.

But in addition to these minor matters, Professor Fisher charges "unwarranted interpretations, neglect and denial of relevant data, and questionable statistical or social principles." If these charges were true, the scientific standing of the table would certainly be seriously jeopardized. It may be answered that the table at present represents one of the basic elements of which compensation insurance rates throughout the country are constructed. At a joint conference of various casualty insurance organizations and four state insurance departments, recently held in the city of New York for the purpose of elaborating a uniform system of compensation insurance rates, *The Standard Accident Table* was approved as the best now available basis of compensating state law differentials (*i.e.*, quantities measuring the comparative cost of the benefit scales of different compensation acts). At the same time, however, the Casualty Actuarial and Statistical Society of America was requested to begin the preparation of a corrected table upon the basis of American experience. So much to point out the practical and theoretical importance of the table.

In particular, Professor Fisher says:

Dr. Rubinow's fundamental assumption that the distribution of injuries will be approximately the same in all lands and his repeated comment that divergencies in reports are due to differences in judgment rather than in physical fact are not consistent with the intrinsic probabilities of the case and scarcely can be reconciled with facts familiar on every side.

If this criticism be valid, the entire purpose of compiling *The Standard Accident Table* vanishes. My fundamental assumption was first stated nearly four years ago, in the following terms:<sup>2</sup>

<sup>1</sup> AMERICAN ECONOMIC REVIEW, vol. V, no. 4 (Dec., 1915), p. 903.

<sup>2</sup> "Arriving at the cost of workmen's compensation in the United States," in *The Market World and Chronicle* (now *The Economic World*), June 22, 1912.

As regards the problem of the nature and effects of injuries . . . there can be no great differences between one country and another. An examination of the statistical material of various countries shows that there is practically no variation from country to country. It appears that whatever its nationality, the human machine is a human machine, and that its average resistance to injury and its average speed of recovery from injury vary very little.

Later, my theory was stated more specifically:<sup>3</sup>

Given a sufficiently variegated industrial activity, the distribution of accidents according to their physical results will be fairly uniform anywhere.

Some of the best students of compensation problems, such as Professor A. W. Whitney,<sup>4</sup> now manager of the Workmen's Compensation Service Bureau, and A. H. Mowbray,<sup>5</sup> actuary of the Massachusetts Employees Insurance Association, have not only accepted the theory, but substantiated it by numerous statistical tests.

The main purpose of the table, as already stated, is to measure the comparative cost of different compensation schedules. The differences are many and complicated. Were all accidents of the same character, the question would be a simple one, but act A may treat temporary disability more liberally than act B, dismemberments less liberally, and fatal accidents in the same way. There are perhaps 20 or 30 different kinds of dismemberments, and for every one of them a different scale of compensation may exist. How shall we say that, in the whole, act A is so many per cent costlier than act B? Evidently we must assume that there is a certain relation between the frequency of accidents of different degree of gravity, and that out of 100 accidents (or 100,000) there will be so many fatal cases, so many losses of arms, so many cases lasting two weeks, etc. In other words, a standard accident table is necessary. But, of course, if there is no one distribution of accidents which would hold true of both states at least approximately, then such a comparison becomes quite impossible.

As explained in my book, the greatest difficulty is the absence of a universally accepted definition of an accident. In Massachusetts, for instance, all accidents are reported even if the time lost be five minutes, or none. In Russia, those under four days are not reported, etc. "Evi-

<sup>3</sup> "Scientific methods of computing compensation rates," in the *Proceedings of the Casualty Actuarial and Statistical Society of America*, vol. 1, no. 1 (1915), p. 18.

<sup>4</sup> See "Memorandum concerning a proposed scale of compensation benefits to be paid workmen injured through industrial accidents, now under consideration by the Industrial Accident Board of California," 1912.

<sup>5</sup> See typewritten memorandum entitled "A suggested basis for the determination of comparative cost of different schedules, and some comparisons thereof," 1912.

dently since the number of such minor accidents is very large, the percentage of all classes of serious accidents whether resulting in death or permanent disability, etc., will depend very much upon how many of these small accidents are included" (pp. 13-14).

With these considerations in mind, I will present only one exhibit in support of my fundamental assumption. The following table shows the percentage distribution of temporary disability cases:

(a) Among employees of the United States government, 1908-1910, when only accidents over one day's duration (the Standard American definition of accident) are included.

(b) In Massachusetts, 1912-1913, with all notices included.

(c) In Russia, 1904-1906, accidents of four days over included.

These examples are selected almost at random, because they offer distribution by comparable periods.

Duration	U. S.	Mass.	Russia
Under 2 weeks .....	55.2	76.5	51.7
2 to 4 " .....	21.2	11.8	22.0
4 to 8 " .....	14.0	7.4	15.0
8 to 13 " .....	4.5	2.6	6.6
Over 13 " .....	5.1	1.7	4.7
	100.0	100.0	100.0

A comparison of these three series of percentages would seem to support Professor Fisher's contention that my assumption is untenable. But it is possible to eliminate the differences in the bases of their data by eliminating for Massachusetts accidents leading to disability of not over one day, and by increasing in the data for Russia the number of cases under two weeks by a certain number to adjust for failure to include accidents of over one day but not over four days' duration. The details of these adjustments are given in the book. After these adjustments are made, the comparison appears as follows:

Duration	U. S.	Mass.	Russia
Under 2 weeks .....	55.2	60.1	57.6
2 to 4 " .....	21.2	20.0	19.3
4 to 8 " .....	14.0	12.5	13.2
8 to 13 " .....	4.5	4.5	5.8
Over 13 " .....	5.1	2.9	4.1
	100.0	100.0	100.0

I believe every unprejudiced statistician will agree that we are dealing here with a definite standard distribution, independent of local conditions. Of the slight differences which appear, most can be readily explained by differences in the application of the compensation act. Thus in the federal statistics, the percentage of accidents under two weeks is lower, and those of two to four weeks higher. There are at least two definite reasons for this: The reporting of minor accidents uncompensated under the act was admittedly deficient in 1908-1911; and the provision under which injuries under 15 days receive no compensation at all, while those 15 days and over receive full compensation from the day of injury, tends to throw a certain number of accidents from the first into the second group.

Professor Fisher says:

The basis of compensation awards and of compensation insurance is not the naked or objective physical fact, but the physical fact as judged by those who administer the laws.

Undoubtedly true. I have emphasized in the formula quoted above the "physical results" of the accidents. Still the judgment, no matter how capricious, must bear some relation to the physical facts. It must be remembered that every time a new compensation law goes into effect, the Actuarial Committee is called upon to furnish a law differential for the new untried law. Even if the facts are assumed to correspond to the *Standard Accident Table*, and the word of law is known, the method of application by the commission or courts can only be a matter of guesswork. If we refuse to accept the above hypothesis, which for a time was nicknamed the "Rubinow law," all basis for scientific rate making disappears.

Judgment, in addition to physical fact, becomes very important when dealing with partial permanent disabilities. Who shall tell what degree of disability a stiff elbow, or a shortened leg, or an unhealed fracture represents? This condition was clearly recognized in the preparation of the *Standard Accident Table*. Certain assumptions had to be made. Some of them undoubtedly will need revision. Hence the temporary character of the first edition. It is Professor Fisher's privilege to disagree at this time with some of these assumptions, but that does not establish "neglect and denial of relevant data" by the author. Again let us examine the definite specifications.

In this country, happily, there are probably not so many as 110 permanent total disabilities to the 100,000 accidents. In Massachusetts in 1912-1913 there were but 7 from 52,267 injuries and in Washington there were but 28 in 42,231 cases disposed of up to September, 1914.

Accepting these Massachusetts and Washington data at their face value, Professor Fisher is justified in making the terse criticism: "It is not true that there are no American data for permanent total disabilities or degrees of partial disabilities." If I had qualified my original statement by the words "reliable," "dependable," or "usable," I would have expressed my thought much more clearly. For I knew of the Massachusetts and Washington data and was forced to reject them absolutely. Data for Washington were not available up to September 30, 1914, at the time of the preparation of the *Standard Accident Table* (July-August, 1914). An earlier report showed that at the end of the first year there were only 2 cases out of 8893 disposed of, or 23 per 100,000; and at the end of the second year, 15 out of 26,248, or 55 out of 100,000. The third year, therefore, developed 13 more cases out of 15,983 cases disposed of, or 81 out of 100,000; while for the three years together the ratio is 66 out of 100,000. The number estimated in the *Standard Accident Table*, 110 per 100,000, does not, therefore, appear so excessively high. In any case, the present time is too early to criticise this estimate.

The situation in Massachusetts is identical. If for the first year, 7 permanent total disabilities out of 52,267 (or only 13 per 100,000) were reported, the second annual report for 1913-1914, just issued, and not available to Professor Fisher at the time of writing his review, shows 20 total permanent cases out of 52,433, or 38 per 100,000. Surely this rapidly rising scale offers some food for reflection. Can the data for the first year be recognized as "valuable statistics"?

To eliminate the errors arising from hasty observations of premature and unreliable data was the very purpose of the *Standard Accident Table*, for a premium based upon an assumption of 13 permanent total disabilities will not pay for the 110 which may be expected to arise, if the *Standard Accident Table* is at all correct. The very concept of a permanent total disability emphasizes the difficulty of recognizing the condition until a considerable time has elapsed.

Most, or in fact nearly all, American compensation acts specify certain gruesome and very rare injuries as constituting total permanent disability by presumption. Among such injuries are: total blindness, loss of both arms or hands, loss of both legs or feet, sometimes loss of any two extremities, total paralysis, or incurable insanity. But these cases of total physical incapacity will not constitute the majority of total economic disability. These injuries specified above can be readily recognized early. In other cases, considerable time must elapse before the permanent character becomes evident.

In fact, since in Massachusetts total disability is compensated for 500 weeks only, after which all payments stop, what statistical basis is there for determining whether the case will last long after the 500 weeks? Furthermore, what necessity is there of such decision as to the permanency, since it makes no difference in award?

Nevertheless, it is significant to observe that in Massachusetts during the first year out of 7 cases of permanent total disability 3 were due to specific injuries as described above, while in the second year out of 20 cases there were only 5 of this character. In other words, during the first year only 4 cases were recognized as belonging to the group of permanent total disability, even though the injuries were not so gruesome, and in the second year 15 cases. It is, of course, certain that whether the condition is recognized in the second year or not payment of the compensation will go on, and it is important that it be provided for in the insurance rate.

The third important point which Professor Fisher raises pertains to the distribution of partial permanent disability cases by degree of disability. As an examination of my book will show, this group of cases proved to be the most difficult to handle, and a substantial part of the study was devoted to it (pp. 23-32). The reason is obvious. In the discovery of the existing condition, and especially in its appraisal, the element of human judgment enters very largely. It is quite likely that for some time the tendency in this country will be to judge these cases too lightly. In fact, the milder cases will not be recognized at all. For this reason the number of cases to be expected in this country was estimated as low as appeared reasonably safe. But this elimination of the lighter cases should of itself increase the average degree of disability per case. For this reason the Danish figures were discounted—which Professor Fisher finds objectionable.

Whether the distributions finally compiled (with about 53 per cent under 20 per cent disability) will still prove too high, only satisfactory statistics for a number of years will demonstrate. But the reference which Professor Fisher makes to the experience of the state of Washington is altogether irrelevant and based upon insufficient analysis of the statistics of that state.

The maximum award for any permanent partial disability is fixed by the law at \$1,500 for the loss of a major arm at or above the elbow. This is arbitrarily estimated to be a sixty per cent disability, each one per cent of permanently reduced efficiency being awarded \$25. All other permanent partial disabilities are awarded in proportion to the estimated disability as compared to the loss of the major arm, each injury being awarded \$25 for each one per cent disability as estimated in the schedule of permanent partial disability.\*

\* *Second Annual Report of the Industrial Insurance Department of the State of Washington*, p. 96.

I submit that such a crude method does not offer any basis for "statistics" of permanent partial disability that might have any general application; for a mass of crude guesses arranged in tabular form does not necessarily constitute statistics. It is enough to point out that under the Washington method there is not a single case of permanent partial disability over 60 per cent.

Of the minor criticisms made by Professor Fisher, some are justified. Others refer to the somewhat careless use of such words as "a few states," where the statement applies to half of the states, or "a great many" when only 9 or 10 states are included. There are two or three of these criticisms, however, which are evidently due to some misunderstanding of my text by Professor Fisher, and perhaps in justice to the *Standard Accident Table* (if not to myself) these should be corrected.

"The 3,005 married employees injured in Washington in 1912 were not all killed: only 279 fatal injuries were reported in that year." The error of using the word "widows," on page 47, when "wives" were meant, should not have closed Professor Fisher's eyes to the fact that on page 45 when quoting the Washington table, the following language was used, clearly indicating that the character of the data was perfectly understood: "Distribution of all persons injured whether fatally or not, according to class and number of dependents."

Professor Fisher writes: "Pensions for dependent children continued until their ages of self support might also have been left out of the standard table, for these are no more common than allowances for disfigurement." That may be true, but the difference in the respective importance of the two provisions justifies different treatment. I had the statement of the Wisconsin Industrial Commission that for a year they had only two cases of disfigurement at a cost of a few hundred dollars; while the pensions for children up to a certain age represent a very important part of the cost of compensation in the largest states, as in New York and Pennsylvania.

It is true that the *Standard Accident Table* was compiled in a hurry and under pressure, and that it, therefore, lacks the finish the importance of the work would justify. In subsequent editions all necessary changes will be carefully considered and such painstaking examination as Professor Fisher has given it is of the very greatest value.

Notwithstanding its defects, it has succeeded in accomplishing what for a time appeared impossible—that stock casualty companies, mutual insurance companies, state funds, insurance departments, and industrial commissions find no difficulty in agreeing upon rates, and that the exper-



ience of one or a few states may be utilized for the purpose of constructing rates for all other states, each with a different law. Because of this method, many American states, in which compensation laws have gone into effect since 1914 or will go into effect in the future, have had and will have at least something approaching scientific rate making from the very first day of compensation, something which, perhaps, not a single European country could boast of.

I. M. RUBINOW.